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A.D. 1862, 10th APRIL. N° 1028.

### Solidifying Worts.

**LETTERS PATENT** to George Dirs Mertens, of 5, Royal Crescent, Margate, in the County of Kent, Gentleman, for the Invention of "**IMPROVEMENTS IN THE PREPARATION OF MATERIALS TO BE EMPLOYED IN THE MAKING OF BEER, AND IN THE MACHINERY OR APPARATUS EMPLOYED THEREIN.**"—A communication from abroad by Charles Theodore Aulhorn, of Dippoldswalde, in the Kingdom of Saxony.

Sealed the 15th July 1862, and dated the 10th April 1862.

**PROVISIONAL SPECIFICATION** left by the said George Dirs Mertens at the Office of the Commissioners of Patents, with his Petition, on the 10th April 1862.

I **GEORGE DIRS MERTENS**, of 5, Royal Crescent, Margate, in the County of Kent, Gentleman, do hereby declare the nature of the said Invention for "**IMPROVEMENTS IN THE PREPARATION OF MATERIALS TO BE EMPLOYED IN THE MAKING OF BEER, AND IN THE MACHINERY OR APPARATUS EMPLOYED THEREIN,**" a communication from abroad by Charles Theodore Aulhorn, of Dippoldswalde, in the Kingdom of Saxony, to be as follows:—

- 10 This Invention relates more particularly to an improved system or mode of treating "worts" with a view to the solidification of the same, whereby the preparation may be easily kept for any length of time in any climate, and be subsequently used, when required, for the manufacture of beer, by simply dissolving in water.
- 15 According to this Invention it is proposed to evaporate the "worts" in a



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closed vacuum pan, heated by steam heat, and having a fan or other exhauster in connection therewith for the purpose of facilitating and expediting the process of evaporation at a low temperature, so as to prevent any charring of the substance; and for the same object it is of the greatest importance that the substance under treatment be kept in a constant state of agitation. This 5 is effected, according to my improvements, by means of a mechanical stirrer, consisting of a vertical spindle passing through a stuffing box at the top of the vacuum pan cover, and suspended at its upper end by a link from a lever arm. The bottom of the spindle or shaft is provided with a conical plug, which fits a central discharge aperture in the curved bottom of the pan. 10 When the spindle is elevated by the lever before mentioned, the plug is opened, and the partially solidified or viscid substance may be allowed to escape into tins or packing cases, where it is soldered air-tight for the market. The vertical spindle has a series of cross arms screwed thereto near its lower extremity, to which are attached a number of pallets or scrapers, which revolve 15 constantly over and upon the surface of the bottom of the pan, and so effect the desired agitation of the substance under evaporation. The agitator is driven by gearing outside the pan, the same driving shaft transmitting motion also to the fan. A convenient filler is applied to the pan, and suitable steam and condensation pipes are adapted to the steam chamber immediately below 20 the bottom thereof. The temperature I propose to use in the evaporating process ranges from one hundred Fahrenheit to two hundred Fahrenheit.

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**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said George Dirs Mertens in the Great Seal Patent Office on the 10th October 1862.

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**TO ALL TO WHOM THESE PRESENTS SHALL COME, I, GEORGE DIRS MERTENS, of 5, Royal Crescent, Margate, in the County of Kent, Gentleman, send greeting.**

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent bearing date the Tenth day of April, in the year of our Lord One 30 thousand eight hundred and sixty-two, in the twenty-fifth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said George Dirs Mertens, Her special license, that I, the said George Dirs Mertens, my executors, administrators, and assigns, or such others as I, the said George Dirs Mertens, my executors, administrators, or assigns, should 35 at any time agree with, and no others, from time to time, and at all times thereafter, during the term therein expressed, should and lawfully might



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make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN THE PREPARATION OF MATERIALS TO BE EMPLOYED IN THE MAKING OF BEER, AND IN THE MACHINERY OR APPARATUS EMPLOYED THEREIN," a  
5 communication from abroad by Charles Theodore Aulhorn, of Dippoldswalde, in the Kingdom of Saxony, upon the condition (amongst others) that I, the said George Dirs Mertens, my executors or administrators, by an instrument in writing under my hand and seal, or under the hand and seal of one of them, should particularly describe and ascertain the nature of the said Invention,  
10 and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said George Dirs Mertens, do hereby declare the nature of the said Invention, and in what manner the same is to  
15 be performed, to be particularly described and ascertained in and by the following statement, reference being had to the accompanying Drawings, and to the letters and figures marked thereon, that is to say:—

My said Invention relates more particularly to an improved system or mode of treating "worts," with a view to the solidification of the same, whereby the  
20 preparation may be easily kept for any length of time in any climate, and be subsequently used, when required, for the manufacture of beer, by simply dissolving in water.

According to this Invention it is proposed to evaporate the "worts" in a closed vacuum pan heated by steam heat, and having a suitable exhaustor in  
25 connection therewith, for the purpose of facilitating and expediting the process of evaporation at a low temperature, so as to prevent any charring of the substance; and for the same object it is of the greatest importance that the substance under treatment be kept in a constant state of agitation. This is effected, according to my improvements, by means of a mechanical stirrer,  
30 consisting of a vertical spindle passing through a stuffing box at the top of the vacuum pan cover, and driven by gearing or other mechanical appliance. The bottom of the pan is provided with a horizontal sluice or slide valve and cock, which fits against a central discharge aperture in the curved bottom of the pan. When the slide is opened by a lever for that purpose, the partially  
35 solidified or viscid substance may be allowed to escape into tins or packing cases, where it is soldered air-tight for the market. The vertical spindle has a series of cross arms fitted thereto near its lower extremity, to which are attached a number of pallets or scrapers, which revolve constantly over and upon the surface of the bottom of the pan, and so effect the desired agitation



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of the substance under evaporation. A convenient filler or man-hole is applied to the pan, and suitable steam and condensation pipes are adapted to the steam chamber immediately below the bottom thereof. The temperature I propose to use in the evaporating process ranges from one hundred Fahrenheit to two hundred Fahrenheit. 5

And in order that the said Invention may be fully understood, I shall now proceed more particularly to describe the same, and for that purpose I shall refer to the Figures on the Sheet of Drawings hereunto annexed, the same letters of reference indicating corresponding parts in both Figures.

Figure 1 of the annexed Sheet of Drawings represents, in vertical section 10 and partial elevation, the most convenient mode of constructing the said apparatus, and Figure 2 is a corresponding horizontal section of the same.

A is a vacuum pan, beneath the curved bottom of which is a steam chamber B, supplied with steam from the pipe C, and provided or not with pipes or cocks for carrying off the water of condensation. This steam 15 chamber serves to heat the contents of the vacuum pan, and in order to further facilitate its evaporation at a low temperature, a pipe D opens into the top of the pan, and leads away to the air pump or pumps, or other suitable exhausting apparatus. The "worts" to be solidified are introduced through the man-hole or filling aperture E, which is provided with a moveable 20 air-tight cover for that purpose, and during the whole period of evaporation the "worts" subjected to a constant stirring action by means of revolving scrapers or stirrers in the form of pallets, as shewn at F, F. These pallets are fixed in the arms G, G, which are themselves carried by the short arms H, H, of a boss I. A second boss K, also provided with short 25 arms L, L, carries the two curved scoops or scrapers M, M. The form of these scoops is such, that whilst they rotate in the direction of the arrows they will tend to collect or scraper in the partially solidified "worts" towards the centre of the bottom of the vacuum pan, but as each curved scoop is succeeded by a set of inclined pallets F, F, which are set in a radial line 30 from the centre at their scraping edges, the result is that the "worts" are forced out from the centre again, and spread over the surface of the pan, consequently an effectual stirring or agitation of the "worts" is obtained so long as the stirrers are in action. The bosses I, K, to which the two sets of stirrers are severally connected, are both carried by the lower extremity of a 35 vertical shaft N, which rotates in a bearing O inside the pan, and is supported at its upper end by a stuffing box P, through which it passes, motion being imparted to it outside the pan by the bevel wheels at Q. The boss I, which carries the set of scrapers or pallets F, F, is capable of sliding ver-



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tically along a feather on the vertical shaft, and is connected to the fork of a clutch lever R, centred at S inside the pan; which lever enables the boss to be lifted, and the pallets F to be raised clear from the bottom of the pan. This is effected when the "worts" are sufficiently solidified to be discharged, at which period the cover is removed from the man-hole, and the attendant introducing his arm inside the pan draws forward the lever, and so receives the pallets. The rotating motion of the curved scrapers is still continued for a time (the boss K being fast on the lower end of the vertical shaft), and the result is that they gradually draw the entire contents of the pan towards the central discharging aperture, shewn dotted at T; and the slide valve and cock U having been previously opened by its lever V, the "worts," now partly solidified, are discharged through the aperture into suitable cases for its reception placed beneath.

Having now described and particularly ascertained the nature of the said Invention, and the manner in which the same is or may be used or carried into effect, I would observe, in conclusion, that what I consider to be novel and original, and therefore claim as the Invention secured to me by the herein-before in part recited Letters Patent, is,—

First, the general construction, arrangement, and combination of machinery or apparatus for preparing solidified "worts," substantially in the manner and for the purpose herein-before described.

Second, the peculiar mode of preparing solidified "worts" by evaporating the same at a low temperature in vacuum pans provided with stirrers, and heated by steam, substantially as herein-before described.

In witness whereof, I, the said George Dirs Mertens, have hereunto set my hand and seal, this Ninth day of October, One thousand eight hundred and sixty-two.

GEORGE D. MERTENS. (L.S.)

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185. ALCOHOL.

Mashing-  
Apparatus-  
Mash-tubs-  
Rakes

British Patent

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1862  
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MILLER'S SPECIFICATION.

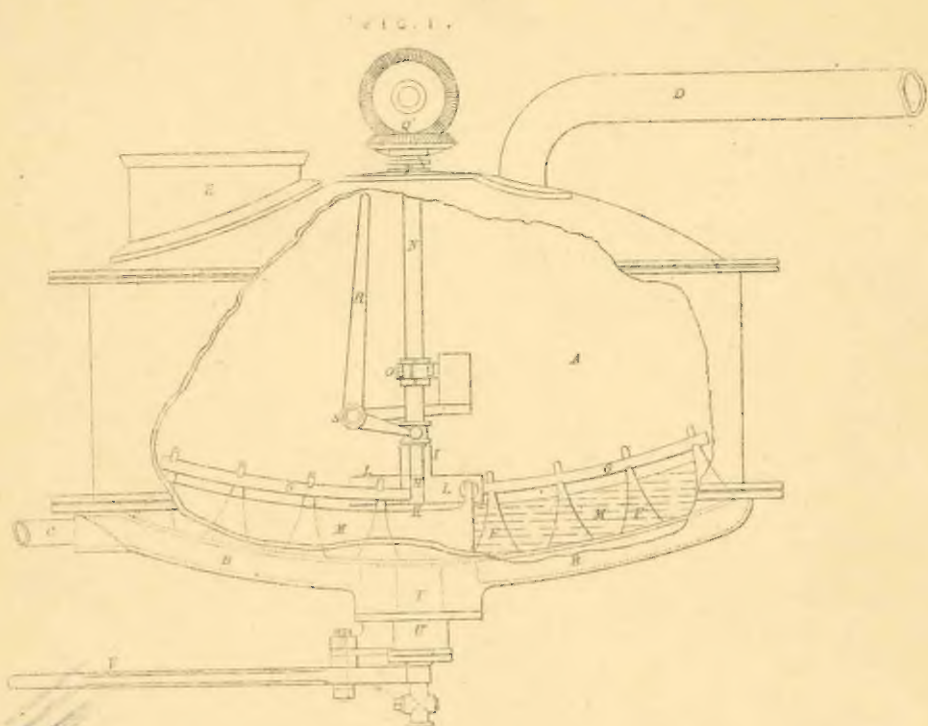


FIG. 2.

